A NEEDS ANALYSIS STUDY OF THE

RESIDENTIAL ENERGY CONSERVATION INDUSTRY

VOLUME I: REPORT

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1.0 INTRODUCTION

Goss, Gilroy & Associates Ltd. were asked by the Industry and Technology Group at Energy, Mines and Resources to undertake a "Needs Analysis Study of the Residential Energy Conservation Industry". This study focused upon three distinct sub-sectors within this industry, namely: Home Renovation Contractors; Siding and Roofing Contractors; and, Heating and Refrigeration Contractors.

The major objectives for this study were twofold. The first objective was to develop an industry situation analysis which would: provide a profile (sales, number of employees, geographic location) for establishments within specific sub-sectors; identify distribution channels used for products and/or services; and, profile the application of energy conservation technology within relevant sub-sectors. These objectives are addressed in Section 3.0 of this report.

The second objective addressed in this study was to provide a baseline description of the level of technical knowledge that currently exists within each of the sub-sectors and to provide a description of existing and future demand for technical training. These objectives are addressed in Section 4.0 of this report.

While the initial Terms of Reference for this study requested a survey of the Insulation industry, this survey was actually completed outside of the scope of this study. As such, these survey results are not reported herein. However, we have included information for this sub-sector as part of the Industry Situation analysis presented in Section 3.0. The decision to include this information was made because this sub-section comprises activities purchased and/or undertaken by both Home Renovation and Siding/ Roofing Contractors.

The information presented in this report was collected from three principal sources. The information presented in the Industry Situation Section of the report was largely provided by Statistics Canada and

selected manufacturers. The information in the Major Survey Findings Section and in Appendix C was collected during the course of a survey using structured, telephone interviews conducted with 100 firms in each sub-sector of interest (300 firms in total). The methodology used to implement the survey is the topic of Section 2.0.

2.0 SURVEY METHODOLOGY

As previously mentioned, much of the information required for this study was collected by means of a survey, using telephone interviewing techniques. The methodology used for this survey is the topic for this Section of the report. This information is included to allow the reader to obtain an understanding of the design and implementation aspects of this survey and thereby be in a better position to know how much confidence to place in the survey results.

The Terms of Reference for this study stated that three distinct populations were to be surveyed (Home Renovators, Siding/Roofing Contractors and Heating/Refrigeration Contractors). There was a problem, however, in identifying (name, address, telephone number) individual firms within each of these sub-sectors. To solve this problem a sample frame was constructed comprised of firms listed in the "yellow pages" of telephone directories for Canadian cities having populations in excess of 20,000 people. This cut-off size was selected mainly for cost considerations. However, it is believed that the major portion of each target group is contained in the sample frame.

From the telephone directory, a sample frame containing a total of 13,673 firms was compiled. The breakdown of firms by sub-sector is as follows: Home Renovation Contractors - 5,510 firms; Heating/Refrigeration Contractors - 3,628 firms; and, Siding/Roofing Contractors - 4,535 firms. We then randomly selected a sample of firms from within each of the three sub-sectors. As the response rates for the actual survey was different for each sub-sector, the number of firms selected from the sample frame also varied by sector. Specifically, for each sub-sector the following samples were drawn: Home Renovation Contractors - 299; Heating/Refrigeration Contractors - 146; and, Siding/Roofing Contractors - 206. One hundred responses were obtained from **each** of these three sub-sectors.

The survey was designed to be implemented using a structured questionnaire (Appendix A) administered over the telephone. The questionnaire was designed and then submitted to personnel at Statistics Canada. At this point the questionnaire and survey methodology were scrutinized and subsequently approved by Statistics Canada. The questionnaire was then translated into French and both the English and French versions were pre-tested and the required modifications were made. Interviewers were then trained and the interviewing process was initiated. Each completed questionnaire was edited and prepared for data entry immediately following the telephone interview.

The telephone interviews were completed within 8 weeks. At this point in time a data base was created and all data contained in this data base were verified and subject to further edit checks. Analyses were then undertaken using the Statistical Package for the Social Sciences (SPSS-PC) software. The statistical tables that resulted from this analysis are presented in Appendix C to this report.

2.1 DATA RELIABILITY

The issue of data reliability will be addressed from two points of view. The first and most commonly used measures of data reliability are level of confidence and confidence interval. These two measures, which are not independent of each other, address data reliability from the aspect of the sample design and as such reflect sampling errors. The second aspect to be addressed are non-sampling related errors.

Sampling Errors

Sampling errors, in the main, are associated with the sample size that is chosen and the characteristics of the survey design itself. For example, if a 100% (census) sample was taken, then no sampling error would exist. However, the smaller the sample size the larger the likely sampling error. Various sample designs (random; stratified; etc.) can be used (to some extent) to reduce the sampling variability.

One way to assess the importance of these types of errors is to present results in a probability-based bandwidth (confidence interval) around the actual survey response. In this survey, for questions asking for a "yes" or "no" type response, 50% of the survey respondents may have replied "yes". In extending the results to the population we might say that we are 95% sure (confident) that the results obtained if the whole population was surveyed, would lie between 40% and 60%. These latter two figures form the bandwidth or confidence interval estimates around the sample response. This example represents a "worst case" from the viewpoint of data reliability.

Non-Sampling Errors

Non-sampling errors can be classified into two groups - random types or errors whose effects approximately cancel out if fairly large samples are used and, biases which tend to create errors in the same direction and thus cumulate over the entire sample. With large samples, the possible biases are the principal causes for concern about the quality of a survey.

Biases can arise from any aspect of the survey operation. Some of the main contributing causes of bias are: non-responses; knowledge of respondent; understanding respondent may have of concepts; processing errors, etc.

Unfortunately, unlike sampling errors, there is no simple and direct method of estimating the size of non-sampling errors. In most surveys, it is not practical to measure the possible effect on the statistics of the various potential sources of error. However, there has been a considerable amount of research on the kinds of errors that are likely to arise in different kinds of surveys. By examining the procedures and operations of a specific survey, it is possible to assess its quality. Rarely will this produce actual error ranges, as for sampling errors. In

most cases, one can only state that, for example, the errors are probably relatively small and will not affect most conclusions drawn from the survey, or that the errors may be fairly large and inferences are to be made with caution.

For purposes of survey data presented in this report, non-sampling errors in general are thought to be relatively small. However, there are exceptions with regard to specific questions from the questionnaire. The following identifies questions (from the Questionnaire in Appendix A) for which the reader should use caution when making conclusions from the information that is presented.

- **Question 4b** asked respondents how much they would pay for a 15 minute cassette. Respondents were reluctant to answer this question as they were not in a position to comprehend the quality of information contained on the cassette.

- **Question 15** asked how many people from the responding firms would attend training programs. Respondents stated that without knowing the details of specific training programs, they were not able to provide meaningful answers.

There were no major deficiencies associated with the remaining questions used for the survey. However, the reader should be cautious in using results associated with questions having a low response/high non-response rate.

3.0 INDUSTRY PROFILE

This section of the report presents a situation analysis for the whole home improvements and retrofit marketplace, and profiles of the individual target groups.

3.1 CONSUMER EXPENDITURE FOR RENOVATION WORK

Statistics on home improvements and retrofit were found to be categorized under "renovations". Our primary source of data in this area was the Statistics Canada publication no. 62-555 - "Family Expenditures in Canada (1982)". An extract of relevant sections of the survey questionnaire is presented in Appendix D. The published survey data was supplemented by tables prepared by the Current Investment Indicators Group at Statistics Canada. These tables updated the 1982 data to 1985, and adjusted it to incorporate renovations done by landlords and renovations to cottages.

It should be noted that the definition of renovation is broad in the Family Expenditure Survey, encompassing all materials and labour used in repairs, alterations and improvements to residential property. The footnotes to Table 3.1 provide details on the components of the definition.

Although the questionnaire incorporated some classification of renovation work by trades, no analyses have been published to this level of detail, and energy conservation represents only an unspecified portion of the reported figures.

Statistics on residential construction expenditure are presented in Table 3.1. Overall, renovation expenditures in Canada were $13.2 billion during 1985, $9.5 billion of which was for alterations and improvements. Two-thirds of renovation expenditures take place in Ontario and Quebec. In Canada, 55% of all residential housing investment is for renovations, compared to 43% for new construction.

TABLE 3.1: CONSUMER EXPENDITURE PROFILE - RESIDENTIAL CONSTRUCTION ($000)
(1985)

Category	Atlantic Provinces	Quebec	Ontario	Prairies	British Columbia(1)	Canada
New Construction	**795,009**	**2,509,186**	**4,410,621**	**1,304,811**	**1,332,310**	**10,351,937**
Renovations	**1,078,445**	**3,651,501**	**5,039,653**	**1,973,184**	**1,468,962**	**13,211,745**
Repairs (3)	228,500	812,700	1,115,500	498,800	319,500	2,975,000
Alterations & Improvements (2)	777,001	2,575,000	3,641,000	1,399,001	1,109,000	9,501,002
Cottages	52,295	195,506	243,639	71,310	31,495	594,245
Conversions	20,649	68,295	39,514	4,073	8,967	141,498
Supplementary (Acquisition Costs)	**38,009**	**183,097**	**234,294**	**71,305**	**85,180**	**611,885**
Total Housing Investment	**1,911,463**	**6,343,784**	**9,684,568**	**3,349,300**	**2,886,452**	**24,175,567**
Ratio: Renovations to Total Investment	**56.4%**	**57.6%**	**52.0%**	**58.9%**	**50.9%**	**54.6%**
Percentage: Alterations Conversions and Improvements to New Construction	**100.3%**	**105.3%**	**83.4%**	**107.5%**	**83.9%**	**93.1%**

NOTES RELATING TO TABLE 3.1

1. Includes Yukon and Northwest Territories.

2. The Terms Alterations and Improvements include Labour and Materials, Additions, Renovations and Installation/Replacement of Equipment and Fixtures, Undertaken to Modify or Increase the Usefulness and/or Life of Residential Properties.

   The Term Additions Includes: Structural Extensions, Garages and Car Ports, Inground Swimming Pools, Fences, Patios, Driveways and Landscaping. The Term Renovations Includes Interior and Exterior Work Such As: Eavestroughing; New Exterior Walls, Door, Windows and Dormers; Additional Insulation; Floors, Ceilings and Walls; Wall-to-Wall Carpeting; Electrical Wiring; Piping; Bathroom Remodelling; Kitchen Remodelling; Basements and Attics. Installation and Replacement of Equipment and Fixtures Includes: Plumbing, Heating, Air Conditioners, Electrical, Built-in Appliances and Wall-to-Wall Carpeting.

3. The Term Repairs Includes: Maintenance, Labour and Materials, Expenditures Made on Existing Properties (Structure and Land) In Order to Keep Them in Good Working Order and Appearance, and Repair Labour and Materials Expenditures Incurred to Replace or Correct Broken/Damaged/Malfunctioning Components of an Existing Capital Asset. The Following Repairs are Included Under the Definition: Painting, Wall Papering, Plastering/Drywall, Flooring, Carpeting, Re-Roofing, Eavestroughing, Roof Repairs, Exterior Walls, Caulking and Weather Stripping, Patios, Fences, Driveways, Heating System, Air Conditioning, Plumbing, Electrical, Carpentry, etc.

3.2 INDUSTRY SIZE

This sub-section profiles the size of the target industry groups, by geographical areas, in terms of: number of firms, number of employees and sales volume. Because no statistics were available for the Home Improvements industry, we have substituted statistics on the insulation and glass and glazing industries to pick up energy conservation activities not included in the other groups.

The primary source of target industry group size data was the Statistics Canada publication No. 64-210 - "The Special Trades Contracting Industry" (1983). The publication was derived from the 1983 Census of the Construction Industry, in which each firm's construction work was pro-rated across 41 trade categories, across categories of construction (residential/non- residential) and across types of work (new construction/ repair). Data was also collected from each firm on its revenues, employees and financial results. Definitions of the contents of the tables are presented at the end of this sub-section.

Clarifications on the data were obtained from the Census of Construction Section at Statistics Canada. The statistics exclude general and engineering contractors, who comprise 32% of the construction industry output, but do not themselves perform special trades work. It should be noted that the census was based on a different population than the Consumer Expenditure Survey, and the results are reported for a different year; thus, the tables are not directly comparable.

The Statistics Canada data was supplemented by other industry data from trade journals, particularly in the case of the Siding Industry, where Alumni-News was used. However, these statistics did not reconcile closely with those of Statistics Canada, likely due to their limited survey sample (major manufacturers).

Statistics Canada's classification structure for the Special Trades Contracting Industry Census includes "additions, conversions, alterations and renovations" with "new construction". "Restoration, components replacement, servicing and maintenance" are included under "repair and service work". As a **rough approximation**, the ratio "alterations, conversions and improvements to new construction" from Table 3.1 can be used to prorate new construction/renovation into its components in Tables 3.2 through 3.13. For example, for Canada, the proportion of "renovation" would be 93.1/193.1 or 48.2% of the reported figure in each table.

A further proration of the resulting figure would be required to separate residential from non-residential activity (using percentages provided in each table).

3.2.1 The Siding Industry

Table 3.2 presents a 1983 profile of Canadian Siding Contractors.

There are 3,123 establishments whose primary construction activity is siding work. The majority (51%) of these are located in Ontario. Almost all of the firms (93%) focus on the residential market. A slight majority of the firms (52%) concentrate on new construction and renovation, rather than repair work; in British Columbia, almost all of the firms (97%) concentrate on new construction and renovation.

The Siding Industry employs a total of 4,115 employees, or an average of 1.3 per company. However, two-thirds of these are owners and partners, rather than salaried employees. The Industry also uses 3,254 person years of wages labour, or an average of 1.0 person years of wages labour per company.

TABLE 3.2: INDUSTRY PROFILE OF SIDING CONTRACTORS (10) FOR 1983

	Atlantic Provinces	Quebec	Ontario	Prairies	British Columbia (8)	Canada
Establishments (2)	**293**	**552**	**1,595**	**407**	**276**	**3,123**
By Primary Type of Construction						
Residential Construction (6)	(97%)	(82%)	(96%)	(91%)	(91%)	(93%)
Non-Residential Construction (7)	(3%)	(18%)	(4%)	(9%)	(9%)	(7%)
By Primary Type of Work						
New Construction/Renovation (3)	(32%)	(56%)	(45%)	(58%)	(97%)	(52%)
Repairs (4)	(68%)	(44%)	(55%)	(42%)	(3%)	(48%)
By Company Size (Sales)						
Less than $50,000	(65%)	(31%)	(52%)	(70%)	(74%)	(54%)
$50,000 to $100,000	(13%)	(22%)	(25%)	(10%)	(8%)	(20%)
$100,000 to $250,000	(10%)	(26%)	(15%)	(9%)	(9%)	(15%)
$250,000 to $500,000	(6%)	(12%)	(4%)	(5%)	(5%)	(6%)
More than $500,000	(6%)	(9%)	(4%)	(6%)	(4%)	(5%)
Output Value (5) ($000)	**35,227**	**104,053**	**176,264**	**64,374**	**32,592**	**412,510**
Employees	**385**	**822**	**1,928**	**611**	**369**	**4,115**
Salaried	(39%)	(50%)	(28%)	(46%)	(32%)	(36%)
Owners/Partners	(61%)	(50%)	(72%)	(54%)	(68%)	(64%)
Wages Person Years (9)	**504**	**607**	**1,322**	**508**	**223**	**3,254**
Ratios						
Output Value Per Establishment	**120.2**	**188.5**	**110.5**	**158.2**	**118.1**	**132.1**
Output Value Per Employee	**91.5**	**126.6**	**91.4**	**105.4**	**88.3**	**100.2**
Employees Per Establishment	**1.3**	**1.5**	**1.2**	**1.5**	**1.3**	**1.3**
Wages Person Years Per Establishment	**1.7**	**1.3**	**0.8**	**1.2**	**0.8**	**1.0**

Source: Statistics Canada (1).
All Notes Are Explained on Page 29 of the Report.

The total construction output (revenues) from siding work is $412 million a year. This represents an average of $132,000 per company with siding as its primary activity, or $100,000 per employee. These averages are substantially higher in Quebec than elsewhere. Siding companies generally have a low annual business volume, three-quarters of them being below $100,000, and most (95%) below $500,000.

3.2.2 The Roofing Industry

Table 3.3 presents a 1983 profile of Canadian Roofing Contractors. Tables 3.4 and 3.5 provide a breakdown into Contractors specializing in shingling and metallic/built-up roofing respectively.

There are 2,725 establishments whose primary construction activity is roofing. Thirty-nine percent of these are located in Ontario. Fifty-four percent of the companies specialize in shingling, and the remainder in metallic/built-up roofing. Most of the firms (83%) concentrate on the residential marketplace. Shingling contractors concentrate even more on the residential marketplace (97%), while only 67% of metallic/built-up roofing contractors focus on residences. The majority of firms (57%) primarily do repair work.

The Roofing Industry employs a total of 4,224 employees, or an average of 1.6 per company. Fifty-six percent of the employees are salaried. In Quebec, the proportion of salaried employees rises to 66%. Only 36% of shingling employees are salaried, while 71% of metallic/built-up employees are salaried. The Industry also uses 5,654 person years of wages labour, or an average of 2.1 person years of wages labour per company.

The total construction output from roofing work is $700 million a year. This represents an average of $257,000 per company with roofing as a primary activity, or $165,000 per employee. The averages are highest in Quebec, and lowest in B.C. They are significantly higher for metallic/built-up roofing companies, and lower for shingling companies. Roofing companies generally have a low annual business volume, albeit on average more than double that of siding companies. Sixty-one percent of roofing companies have revenues below $100,000, while 90% are below $500,000. Per company revenues are highest in Quebec, and lowest in B.C. Shingling companies tend to be much smaller than metallic/built-up roofing companies.

TABLE 3.3: INDUSTRY PROFILE OF RO..ING CONTRACTORS (11) FOR 1983

	Atlantic Provinces	Quebec	Ontario	Prairies	British Columbia (8)	Canada
Establishments (2)	144	371	1,067	629	514	2,725
By Primary Type of Construction						
Residential Construction (6)	(48%)	(76%)	(84%)	(88%)	(92%)	(83%)
Non-Residential Construction (7)	(52%)	(24%)	(16%)	(12%)	(8%)	(17%)
By Primary Type of Work						
New Construction/Renovation (3)	(40%)	(58%)	(41%)	(32%)	(49%)	(43%)
Repairs (4)	(60%)	(42%)	(59%)	(68%)	(51%)	(57%)
By Company Size (Sales)						
Less than $50,000	(44%)	(22%)	(40%)	(50%)	(40%)	(40%)
$50,000 to $100,000	(18%)	(27%)	(25%)	(15%)	(18%)	(21%)
$100,000 to $250,000	(17%)	(25%)	(18%)	(18%)	(25%)	(20%)
$250,000 to $500,000	(10%)	(12%)	(7%)	(7%)	(9%)	(9%)
More than $500,000	(11%)	(14%)	(10%)	(10%)	(8%)	(10%)
Output Value (5) ($000)	35,814	119,166	282,812	160,465	101,491	699,748
Employees	191	681	1,783	883	686	4,224
Salaried	(57%)	(66%)	(54%)	(54%)	(55%)	(56%)
Owners/Partners	(43%)	(34%)	(46%)	(46%)	(45%)	(44%)
Wages Person Years (9)	409	943	2,414	1,148	740	5,654
Ratios						
Output Value per Establishment	248.7	321.2	265.1	255.1	197.5	256.8
Output Value Per Employee	187.5	175.0	158.6	181.7	147.9	165.7
Employees Per Establishment	1.3	1.8	1.7	1.4	1.3	1.6
Wages Person Years Per Establishment	2.8	2.5	2.3	1.8	1.4	2.1

Source: Statistics Canada (1).
All Notes Are Explained on Page 29 of the Report.

TABLE 3.4: INDUSTRY PROFILE OF ROOFING CONTRACTORS (SHINGLING (12) FOR 1983

	Atlantic Provinces	Quebec	Ontario	Prairies	British Columbia (8)	Canada
Establishments (2)	**78**	**62**	**658**	**351**	**311**	**1,460**
By Primary Type of Construction						
Residential Construction (6)	(76%)	(90%)	(99%)	(98%)	(100%)	(97%)
Non-Residential Construction (7)	(24%)	(10%)	(1%)	(2%)	(0%)	(3%)
By Primary Type of Work						
New Construction/Renovation (3)	(53%)	(92%)	(42%)	(31%)	(52%)	(44%)
Repairs (4)	(47%)	(8%)	(58%)	(69%)	(48%)	(56%)
By Company Size (Sales)						
Less than $50,000	(59%)	(11%)	(50%)	(46%)	(65%)	(51%)
$50,000 to $100,000	(26%)	(60%)	(23%)	(20%)	(11%)	(22%)
$100,000 to $250,000	(10%)	(13%)	(19%)	(24%)	(21%)	(20%)
$250,000 to $500,000	(1%)	(10%)	(5%)	(8%)	(2%)	(5%)
More than $500,000	(4%)	(6%)	(3%)	(2%)	(1%)	(2%)
Output Value (5) ($000)	**8,393**	**12,186**	**99,667**	**49,780**	**23,775**	**193,801**
Employees	**78**	**103**	**879**	**383**	**333**	**1,776**
Salaried	(21%)	(58%)	(36%)	(36%)	(30%)	(36%)
Owners/Partners	(79%)	(42%)	(64%)	(64%)	(70%)	(64%)
Wages Person Years (9)	**90**	**91**	**753**	**292**	**154**	**1,380**
Ratios						
Output Value Per Establishment	**107.6**	**196.5**	**151.5**	**141.8**	**76.4**	**132.7**
Output Value Per Employee	**107.6**	**118.3**	**113.4**	**130.0**	**71.4**	**109.1**
Employees Per Establishment	**1.0**	**1.7**	**1.3**	**1.1**	**1.1**	**1.2**
Wages Person Years Per Establishment	**1.1**	**1.5**	**1.1**	**0.8**	**0.5**	**0.9**

Source: Statistics Canada (1).
All Notes Are Explained on Page 29 of the Report.

TABLE 3.5: INDUSTRY PROFILE OF ROOFING CONTRACTORS (METAL & BUILT UP (13)) FOR 1983

	Atlantic Provinces	Quebec	Ontario	Prairies	British Columbia (8)	Canada
Establishments (2)	**66**	**309**	**409**	**278**	**203**	**1,265**
By Primary Type of Construction						
Residential Construction (6)	(15%)	(73%)	(59%)	(76%)	(80%)	(67%)
Non-Residential Construction (7)	(85%)	(27%)	(41%)	(24%)	(20%)	(33%)
By Primary Type of Work						
New Construction/Renovation (3)	(26%)	(52%)	(40%)	(34%)	(45%)	(41%)
Repairs (4)	(74%)	(48%)	(60%)	(66%)	(55%)	(59%)
By Company Size (Sales)						
Less than $50,000	(26%)	(24%)	(22%)	(55%)	(2%)	(27%)
$50,000 to $100,000	(9%)	(21%)	(28%)	(9%)	(28%)	(21%)
$100,000 to $250,000	(24%)	(27%)	(17%)	(10%)	(31%)	(20%)
$250,000 to $500,000	(21%)	(12%)	(11%)	(7%)	(20%)	(13%)
More than $500,000	(20%)	(16%)	(22%)	(19%)	(19%)	(19%)
Output Value (5) ($000)	**27,421**	**106,980**	**183,145**	**110,685**	**77,716**	**505,947**
Employees	**113**	**578**	**904**	**500**	**353**	**2,448**
Salaried	(81%)	(67%)	(72%)	(68%)	(79%)	(71%)
Owners/Partners	(19%)	(33%)	(28%)	(32%)	(21%)	(29%)
Wages Person Years (9)	**319**	**852**	**1,661**	**856**	**586**	**4,274**
Ratios						
Output Value Per Establishment	**415.5**	**346.2**	**447.8**	**398.1**	**382.8**	**400.0**
Output Value Per Employee	**242.7**	**185.1**	**202.6**	**221.4**	**220.2**	**206.7**
Employees Per Establishment	**1.7**	**1.9**	**2.2**	**1.8**	**1.7**	**1.9**
Wages Person Years Per Establishment	**4.8**	**2.7**	**4.0**	**3.1**	**2.9**	**3.4**

Source: Statistics Canada (1).
All Notes Are Explained on Page 29 of the Report.

3.2.3 The Heating Industry

Table 3.6 presents a 1983 profile of Canadian Heating Contractors. Tables 3.7, 3.8 and 3.9 provide a breakdown into contractors specializing in wet heating, dry heating and duct work respectively.

There are 4,147 establishments whose primary construction activity is heating. Forty-four percent of these are located in Ontario. Thirty-nine percent of the companies specialize in dry heating, 35% in wet heating and 26% in duct work. A majority of the firms (71%) concentrate on the residential marketplace, particularly in the dry heating area. About half (46%) of the firms concentrate on repair work, particularly in the dry heating area, and in Quebec and the Atlantic Provinces.

The Heating Industry employs a total of 7,152 employees, or an average of 1.7 per company. Sixty-seven percent of the employees are salaried, although this drops to 44% for dry heating. The Industry also uses 12,154 person years of wages labour, or an average of 2.9 person years of wages labour per company.

The total construction output from heating work is $1,644 million a year. This represents an average of $396,000 per company with heating as a primary activity, and $229,000 per employee. The averages are highest in the Prairies, and lowest in the Atlantic. The averages are lower for dry heating activity, and higher for duct work. Heating contractors generally have a low business volume, albeit on average three times that of siding contractors. Fifty-nine percent of the companies have revenues below $100,000, and 88% below $500,000. Ducting companies tend to be larger, and dry heating companies smaller than the averages.

TABLE 3.6: INDUSTRY PROFILE OF HEATING CONTRACTORS (14) FOR 1983

	Atlantic Provinces	Quebec	Ontario	Prairies	British Columbia (8)	Canada
Establishments (2)	**221**	**570**	**1,841**	**754**	**761**	**4,147**
By Primary Type of Construction						
Residential Construction (6)	(81%)	(66%)	(74%)	(63%)	(71%)	(71%)
Non-Residential Construction (7)	(19%)	(34%)	(26%)	(37%)	(29%)	(29%)
By Primary Type of Work						
New Construction/Renovation (3)	(39%)	(27%)	(57%)	(64%)	(62%)	(54%)
Repairs (4)	(61%)	(73%)	(43%)	(36%)	(38%)	(46%)
By Company Size (Sales)						
Less than $50,000	(48%)	(33%)	(42%)	(42%)	(51%)	(43%)
$50,000 to $100,000	(14%)	(17%)	(17%)	(16%)	(16%)	(16%)
$100,000 to $250,000	(22%)	(23%)	(19%)	(18%)	(16%)	(19%)
$250,000 to $500,000	(8%)	(11%)	(10%)	(10%)	(8%)	(10%)
More than $500,000	(8%)	(16%)	(12%)	(14%)	(9%)	(12%)
Output Value (5) ($000)	**58,555**	**263,212**	**727,606**	**380,930**	**214,143**	**1,644,446**
Employees	**341**	**1,164**	**3,221**	**1,339**	**1,087**	**7,152**
Salaried	(63%)	(75%)	(65%)	(74%)	(57%)	(67%)
Owners/Partners	(37%)	(25%)	(35%)	(26%)	(43%)	(33%)
Wages Person Years (9)	**546**	**1,998**	**5,187**	**3,013**	**1,410**	**12,154**
Ratios						
Output Value Per Establishment	**265.0**	**461.8**	**395.2**	**505.2**	**281.4**	**396.5**
Output Value Per Employee	**171.7**	**226.1**	**225.9**	**284.5**	**197.0**	**229.9**
Employees Per Establishment	**1.5**	**2.0**	**1.7**	**1.8**	**1.4**	**1.7**
Wages Person Years Per Establishment	**2.5**	**3.5**	**2.8**	**4.0**	**1.9**	**2.9**

Source: Statistics Canada (1).
All Notes Are Explained on Page 29 of the Report.

TABLE 3.7: INDUSTRY PROFILE OF HEATING CONTRACTORS (NET (15)) FOR 1983

	Atlantic Provinces	Quebec	Ontario	Prairies	British Columbia (8)	Canada
Establishments (2)	**65**	**183**	**694**	**256**	**254**	**1,452**
By Primary Type of Construction						
Residential Construction (6)	(66%)	(72%)	(69%)	(39%)	(40%)	(58%)
Non-Residential Construction (7)	(34%)	(28%)	(31%)	(61%)	(60%)	(42%)
By Primary Type of Work						
New Construction/Renovation (3)	(77%)	(7%)	(73%)	(44%)	(68%)	(63%)
Repairs (4)	(23%)	(93%)	(27%)	(56%)	(32%)	(37%)
By Company Size (Sales)						
Less than $50,000	(49%)	(33%)	(35%)	(42%)	(48%)	(40%)
$50,000 to $100,000	(17%)	(28%)	(16%)	(9%)	(17%)	(14%)
$100,000 to $250,000	(12%)	(22%)	(19%)	(19%)	(19%)	(19%)
$250,000 to $500,000	(8%)	(9%)	(14%)	(14%)	(7%)	(12%)
More than $500,000	(14%)	(8%)	(16%)	(16%)	(9%)	(15%)
Output Value (5) ($000)	**24,433**	**83,532**	**293,796**	**126,920**	**72,071**	**600,752**
Employees	**116**	**434**	**1,352**	**457**	**361**	**2,720**
Salaried	(77%)	(54%)	(73%)	(79%)	(63%)	(74%)
Owners/Partners	(23%)	(46%)	(27%)	(21%)	(37%)	(26%)
Wages Person Years (9)	**276**	**673**	**2,121**	**898**	**496**	**4,464**
Ratios						
Output Value Per Establishment	**375.9**	**456.5**	**423.3**	**495.8**	**283.7**	**413.7**
Output Value Per Employee	**210.6**	**192.5**	**217.3**	**277.7**	**199.6**	**220.9**
Employees Per Establishment	**1.8**	**2.4**	**1.9**	**1.8**	**1.4**	**1.9**
Wages Person Years Per Establishment	**4.2**	**3.7**	**3.1**	**3.5**	**2.0**	**3.1**

Source: Statistics Canada (1).
All Notes Are Explained on Page 29 of the Report.

TABLE 3.8: INDUSTRY PROFILE OF HEATING CONTRACTORS (DRY (16)) FOR 1983

	Atlantic Provinces	Quebec	Ontario	Prairies	British Columbia (8)	Canada
Establishments (2)	**83**	**215**	**769**	**202**	**330**	**1,599**
By Primary Type of Construction						
Residential Construction (6)	(94%)	(72%)	(86%)	(70%)	(95%)	(84%)
Non-Residential Construction (7)	(6%)	(28%)	(14%)	(30%)	(5%)	(16%)
By Primary Type of Work						
New Construction/Renovation (3)	(5%)	(7%)	(44%)	(70%)	(41%)	(39%)
Repairs (4)	(95%)	(93%)	(56%)	(30%)	(59%)	(61%)
By Company Size (Sales)						
Less than $50,000	(41%)	(33%)	(56%)	(49%)	(52%)	(50%)
$50,000 to $100,000	(19%)	(28%)	(15%)	(18%)	(18%)	(18%)
$100,000 to $250,000	(33%)	(22%)	(18%)	(23%)	(18%)	(20%)
$250,000 to $500,000	(6%)	(9%)	(7%)	(5%)	(8%)	(7%)
More than $500,000	(1%)	(8%)	(4%)	(5%)	(4%)	(5%)
Output Value (5) ($000)	**14,656**	**61,219**	**190,573**	**40,391**	**48,927**	**355,766**
Employees	**102**	**299**	**1,056**	**213**	**373**	**2,043**
Salaried	(45%)	(54%)	(44%)	(41%)	(38%)	(44%)
Owners/Partners	(55%)	(46%)	(56%)	(59%)	(62%)	(56%)
Wages Person Years (9)	**86**	**449**	**1,021**	**262**	**255**	**2,073**
Ratios						
Output Value Per Establishment	**176.5**	**284.7**	**247.8**	**200.0**	**148.3**	**222.5**
Output Value Per Employee	**143.7**	**204.7**	**180.5**	**189.6**	**131.2**	**174.1**
Employees Per Establishment	**1.2**	**1.4**	**1.4**	**1.1**	**1.1**	**1.3**
Wages Person Years Per Establishment	**1.0**	**2.1**	**1.3**	**1.3**	**0.8**	**1.3**

Source: Statistics Canada (1).
All Notes Are Explained on Page 29 of the Report.

TABLE 3.9: INDUSTRY PROFILE OF HEATING CONTRACTORS (HEATING DUCTS (17)) FOR 1983

	Atlantic Provinces	Quebec	Ontario	Prairies	British Columbia (8)	Canada
Establishments (2)	**73**	**172**	**378**	**296**	**177**	**1,096**
By Primary Type of Construction						
Residential Construction (6)	(78%)	(62%)	(57%)	(79%)	(72%)	(68%)
Non-Residential Construction (7)	(22%)	(38%)	(43%)	(21%)	(28%)	(32%)
By Primary Type of Work						
New Construction/Renovation (3)	(45%)	(35%)	(54%)	(76%)	(93%)	(63%)
Repairs (4)	(55%)	(65%)	(46%)	(24%)	(7%)	(37%)
By Company Size (Sales)						
Less than $50,000	(54%)	(28%)	(27%)	(37%)	(53%)	(36%)
$50,000 to $100,000	(5%)	(14%)	(20%)	(19%)	(11%)	(16%)
$100,000 to $250,000	(18%)	(24%)	(24%)	(13%)	(8%)	(18%)
$250,000 to $500,000	(12%)	(11%)	(8%)	(12%)	(11%)	(11%)
More than $500,000	(11%)	(23%)	(21%)	(19%)	(17%)	(19%)
Output Value (5) ($000)	**19,466**	**118,461**	**243,237**	**213,619**	**93,145**	**687,928**
Employees	**123**	**431**	**813**	**669**	**353**	**2,389**
Salaried	(66%)	(84%)	(79%)	(81%)	(70%)	(78%)
Owners/Partners	(34%)	(16%)	(21%)	(19%)	(30%)	(22%)
Wages Person Years (9)	**184**	**876**	**2,045**	**1,853**	**659**	**5,617**
Ratios						
Output Value Per Establishment	**266.7**	**688.7**	**643.5**	**721.7**	**526.2**	**627.7**
Output Value Per Employee	**158.3**	**274.9**	**299.2**	**319.3**	**263.9**	**287.9**
Employees Per Establishment	**1.7**	**2.5**	**2.2**	**2.3**	**2.0**	**2.2**
Wages Person Years Per Establishment	**2.5**	**5.1**	**5.4**	**6.3**	**3.7**	**5.3**

Source: Statistics Canada (1).
All Notes Are Explained on Page 29 of the Report.

3.2.4 The Insulation Industry

Table 3.10 presents a 1983 profile of Canadian Insulation Contractors. Tables 3.11 and 3.12 provide a breakdown into establishments specializing in insulation and thermal insulation, respectively.

There are 1,234 establishments whose primary construction activity is insulation work. One-third of these are located in Ontario. Only nine percent of them specialize in thermal insulation. A large majority (80%) of the firms focus on the residential marketplace. This focus is even stronger (92%) in the general insulation field. There is an even split between new construction/renovation and repair work, although three-quarters of Prairies firms specialize in new construction/ renovation, and three-quarters of Atlantic and Quebec firms specialize in repairs. Only 18% of thermal insulation firms specialize in repairs.

The Insulation Industry employs 2,057 employees, or an average of 1.7 per company. Overall, one-third of the employees are owners/partners, but only 6 percent of thermal insulation employees are owners/partners. Only 25 percent of the employees work for thermal insulation firms. The Industry also uses 4,276 person years of wages labour, or an average of 3.5 person years of wages labour per company.

The total construction output (revenues) from insulation work is $485 million a year, split about evenly between general insulation and thermal insulation. This represents an average of $393 thousand per company with insulation as its primary activity, or $236 thousand per employee. Insulation companies generally have a low business volume, but of a similar scale to the heating industry. Fifty-one percent of the companies have revenues below $100,000, and 84% below $500,000. However, thermal insulation companies are larger, 23% having revenues below $100,000 and 61% below $500,000.

TABLE 3.10: INDUSTRY PROFILE OF INSULATION CONTRACTORS (18) FOR 1983

	Atlantic Provinces	Quebec	Ontario	Prairies	British Columbia (8)	Canada
Establishments (2)	**84**	**291**	**415**	**281**	**163**	**1,234**
By Primary Type of Construction						
Residential Construction (6)	(94%)	(80%)	(80%)	(70%)	(90%)	(80%)
Non-Residential Construction (7)	(6%)	(20%)	(20%)	(30%)	(10%)	(20%)
By Primary Type of Work						
New Construction/Renovation (3)	(24%)	(30%)	(50%)	(73%)	(50%)	(49%)
Repairs (4)	(76%)	(70%)	(50%)	(27%)	(50%)	(51%)
By Company Size (Sales)						
Less than $50,000	(13%)	(32%)	(26%)	(45%)	(57%)	(35%)
$50,000 to $100,000	(36%)	(18%)	(20%)	(12%)	(5%)	(16%)
$100,000 to $250,000	(21%)	(25%)	(24%)	(12%)	(12%)	(20%)
$250,000 to $500,000	(13%)	(12%)	(14%)	(11%)	(12%)	(13%)
More than $500,000	(17%)	(13%)	(16%)	(20%)	(13%)	(16%)
Output Value (5) ($000)	**26,908**	**100,415**	**156,229**	**150,925**	**50,924**	**485,401**
Employees	**115**	**460**	**665**	**527**	**290**	**2,057**
Salaried	(73%)	(72%)	(73%)	(70%)	(52%)	(69%)
Owners/Partners	(27%)	(28%)	(27%)	(30%)	(48%)	(31%)
Wages Person Years (9)	**342**	**665**	**1,540**	**1,324**	**405**	**4,276**
Ratios						
Output Value Per Establishment	**320.3**	**345.1**	**376.5**	**537.1**	**312.4**	**393.4**
Output Value Per Employee	**234.0**	**218.3**	**234.9**	**286.3**	**175.6**	**236.0**
Employees Per Establishment	**1.4**	**1.6**	**1.6**	**1.9**	**1.8**	**1.7**
Wages Person Years Per Establishment	**4.0**	**2.3**	**3.7**	**4.7**	**2.5**	**3.5**

Source: Statistics Canada (1).
All Notes Are Explained on Page 29 of the Report.

TABLE 3.11: INDUSTRY PROFILE OF INSUL...ION CONTRACTORS (19) FOR 1983

	Atlantic Provinces	Quebec	Ontario	Prairies	British Columbia (8)	Canada
Establishments (2)	**77**	**256**	**343**	**232**	**144**	**1,052**
By Primary Type of Construction						
Residential Construction (6)	(99%)	(88%)	(94%)	(84%)	(99%)	(92%)
Non-Residential Construction (7)	(1%)	(12%)	(6%)	(16%)	(1%)	(8%)
By Primary Type of Work						
New Construction/Renovation (3)	(21%)	(25%)	(43%)	(67%)	(45%)	(43%)
Repairs (4)	(79%)	(75%)	(57%)	(33%)	(55%)	(57%)
By Company Size (Sales)						
Less than $50,000	(10%)	(35%)	(28%)	(51%)	(65%)	(39%)
$50,000 to $100,000	(39%)	(19%)	(22%)	(13%)	(4%)	(18%)
$100,000 to $250,000	(21%)	(26%)	(24%)	(13%)	(11%)	(20%)
$250,000 to $500,000	(13%)	(10%)	(14%)	(9%)	(10%)	(11%)
More than $500,000	(17%)	(10%)	(12%)	(14%)	(10%)	(12%)
Output Value (5) ($000)	**23,507**	**59,344**	**91,785**	**57,644**	**29,140**	**261,420**
Employees	**103**	**334**	**501**	**369**	**224**	**1,531**
Salaried	(76%)	(63%)	(67%)	(58%)	(38%)	(60%)
Owners/Partners	(24%)	(37%)	(33%)	(42%)	(62%)	(40%)
Wages Person Years (9)	**299**	**367**	**946**	**468**	**234**	**2,314**
Ratios						
Output Value Per Establishment	**305.3**	**231.8**	**267.6**	**248.5**	**202.4**	**248.5**
Output Value Per Employee	**228.2**	**177.7**	**183.2**	**156.2**	**130.1**	**170.8**
Employees Per Establishment	**1.3**	**1.3**	**1.5**	**1.6**	**1.6**	**1.5**
Wages Person Years Per Establishment	**3.9**	**1.4**	**2.8**	**2.0**	**1.6**	**2.2**

Source: Statistics Canada (1).
All Notes Are Explained on Page 29 of the Report.

TABLE 3.12: INDUSTRY PROFILE OF THERMAL INSULATION CONTRACTORS (20) FOR 1983

	Atlantic Provinces	Quebec	Ontario	Prairies	British Columbia (8)	Canada
Establishments (2)	7	35	72	49	19	182
By Primary Type of Construction						
Residential Construction (6)	(43%)	(17%)	(11%)	--	(26%)	(12%)
Non-Residential Construction (7)	(57%)	(83%)	(89%)	(100%)	(74%)	(88%)
By Primary Type of Work						
New Construction/Renovation (3)	(57%)	(60%)	(81%)	(100%)	(89%)	(82%)
Repairs (4)	(43%)	(40%)	(19%)	--	(11%)	(18%)
By Company Size (Sales)						
Less than $50,000	(43%)	(8%)	(18%)	(14%)	--	(14%)
$50,000 to $100,000	--	(12%)	(11%)	(4%)	(11%)	(9%)
$100,000 to $250,000	(29%)	(17%)	(24%)	(6%)	(21%)	(18%)
$250,000 to $500,000	(14%)	(29%)	(13%)	(25%)	(26%)	(20%)
More than $500,000	(14%)	(34%)	(34%)	(51%)	(42%)	(39%)
Output Value (5) ($000)	3,401	41,071	64,444	93,281	21,784	223,981
Employees	12	126	164	158	66	526
Salaried	(50%)	(96%)	(90%)	(99%)	(100%)	(94%)
Owners/Partners	(50%)	(4%)	(10%)	(1%)	--	(6%)
Wages Person Years (9)	43	298	594	856	171	1,962
Ratios						
Output Value Per Establishment	485.9	1173.5	895.1	1903.7	1146.5	1230.7
Output Value Per Employee	283.4	326.0	393.0	590.4	330.1	425.8
Employees Per Establishment	1.7	3.6	2.3	3.2	3.5	2.9
Wages Person Years Per Establishment	6.1	8.5	8.3	17.4	9.0	10.8

Source: Statistics Canada (1).
All Notes Are Explained on Page 29 of the Report.

3.2.5 The Glass and Glazing Industry

Table 3.13 presents a profile of Canadian Glass and Glazing Contractors.

There are 752 establishments whose primary construction activity is glass and glazing work. Forty-two percent of these are located in Ontario. Sixty-one percent of the firms focus on the residential marketplace. There is an even split between new construction/renovation and repair work, although there is a higher level of specialization in new construction/renovation in the Atlantic Provinces and Prairies, and in repairs in British Columbia.

The Glass and Glazing Industry employs 1,363 employees, or an average of 1.8 per company. Overall, one-third of the employees are owners/partners. The Industry also uses 1,734 person years of wages labour, or an average of 2.3 person years of wages labour per company.

The total construction output (revenues) from glass and glazing work is $227 million a year. This represents an average of $302 thousand per company, with insulation as its primary activity, or $166 thousand per employee. Glass and glazing companies generally have a low business volume. Fifty-three percent of the companies have revenues below $100,000, and 87% below $500,000.

TABLE 3.13: INDUSTRY PROFILE OF GLASS AND GLAZING CONTRACTORS (21) FOR 1983

	Atlantic Provinces	Quebec	Ontario	Prairies	British Columbia (8)	Canada
Establishments (2)	20	105	316	170	141	752
By Primary Type of Construction						
Residential Construction (6)	(30%)	(46%)	(62%)	(62%)	(74%)	(61%)
Non-Residential Construction (7)	(70%)	(54%)	(38%)	(38%)	(26%)	(39%)
By Primary Type of Work						
New Construction/Renovation (3)	(60%)	(48%)	(52%)	(68%)	(30%)	(51%)
Repairs (4)	(40%)	(52%)	(48%)	(32%)	(70%)	(59%)
By Company Size (Sales)						
Less than $50,000	(20%)	(16%)	(45%)	(28%)	(15%)	(31%)
$50,000 to $100,000	(15%)	(26%)	(13%)	(23%)	(40%)	(22%)
$100,000 to $250,000	(15%)	(31%)	(18%)	(27%)	(16%)	(21%)
$250,000 to $500,000	(15%)	(10%)	(11%)	(14%)	(16%)	(13%)
More than $500,000	(35%)	(17%)	(13%)	(8%)	(13%)	(13%)
Output Value (5) ($000)	11,078	43,235	91,924	43,900	36,650	226,787
Employees	41	224	566	337	195	1,363
Salaried	(92%)	(78%)	(63%)	(75%)	(68%)	(70%)
Owners/Partners	(8%)	(22%)	(37%)	(25%)	(32%)	(30%)
Wages Person Years (9)	114	330	698	332	260	1,734
Ratios						
Output Value Per Establishment	553.9	411.8	290.9	258.2	260.0	301.6
Output Value Per Employee	270.2	193.0	162.4	130.3	187.9	166.4
Employees Per Establishment	2.1	2.1	1.8	2.0	1.4	1.8
Wages Person Years Per Establishment	5.7	3.1	2.2	2.0	1.8	2.3

Source: Statistics Canada (1).
All Notes Are Explained on Page 29 of the Report.

NOTES RELATING TO TABLES

(1) Source: The Special Trades Contracting Industry - 1983 (Statistics Canada No. 64-210).

(2) Count of Establishments Whose Primary Activity Matches the Table Title.

(3) Includes Work on Completely New or Original Buildings and Structures; Additions to Existing Buildings and Structures; Conversions; Alterations; Renovations; and Major Component Replacements.

(4) Includes Restoration or Minor Replacement of Components to Upgrade Existing Buildings and Structures to "Original Standards"; and Regular and Extraordinary Servicing or Maintenance of Components.

(5) Total Output Value from Activity Described in Table Title by All Special Trades; Regional Breakdown was Estimated Using Primary Trade Figures.

(6) Residential Dwellings Include: Singles, Duplexes, Triplexes, Town Homes and Apartments of 4 or More Units.

(7) Non-Residential Dwellings Include: Industrial, Commercial, Institutional and Non-Residential Agriculture Buildings.

(8) Includes Yukon and Northwest Territories.

(9) Wage Person Years Were Estimated at 2,000 Paid Hours.

(10) Includes Aluminum, Other Metallic, Exterior Hardwood, Vinyl and Other Non-Metallic Siding.

(11) Includes Shingling, Sheet Metal, Built-up, Tar and Gravel, Eavestroughing and Flashing.

(12) Includes Shingling.

(13) Includes Sheet Metal, Built-up, Tar and Gravel, Eavestroughing and Flashing.

(14) Includes Dry Heating, Gas Piping, Wet Heating, Air Conditioning and Sheet Metal/Other Duct Work.

(15) Includes Wet Heating and Air Conditioning.

(16) Includes Dry Heating and Gas Piping.

(17) Includes Sheet Metal and Other Duct Work.

NOTES RELATING TO TABLES
(Continued)

(18) Includes Insulation of Wall Cavity, Roof and Duct Runs, Thermal Pipe Wrap and Boiler Jackets.

(19) Includes Wall Cavity Insulation and Roof Insulation.

(20) Includes Thermal Pipe Wrap, Boiler Jackets and Duct Run Insulation.

(21) Includes Glass and Glazing Only.

3.3 DISTRIBUTION CHANNELS

The primary source of information on products manufactured for the target groups were yellow pages listings and advertisements in trade journals. These were confirmed in follow-up telephone interviews with two major manufacturers for each target group (excluding Glass and Glazing):

- Siding: Alcan and Daymond
- Roofing: Domtar and IKO
- Heating: Carrier and Lennox
- Insulation: Dow and Fiberglas

In the interviews, we also requested information on distribution channels, and energy conservation features of their products.

It should be noted that there is a significant level of diversification at the contractor level. A Contractor Survey conducted for Energy, Mines and Resources from December, 1985 through February, 1986 indicated that 78% of retrofit contractors provided two or more major services, and 54% three or more. An April 1986 Survey of Canadian Siding Dealers by Alumi-News indicated that 64% of the firms also sell roofing products and 48% insulation products.

3.3.1 The Siding Industry

There are about fifteen major manufacturers of siding and related products in Canada.

The major products manufactured by these companies are as follows:

- Siding (aluminum, vinyl, steel, wood)
- Soffit
- Fascia
- Eavestroughing

- Shutters
- Doors (storm, patio)
- Windows
- Awning
- Railing

Only the door and window products are oriented to energy conservation, although some siding is backed with insulation, and siding is often installed in conjunction with fibreboard insulation. From the survey results (Question 1(b)) presented in Appendix C, some 69% of contractors (Renovators and Siding/Roofing) reported that they would install insulation with their siding if requested by their customers.

The manufacturers ship their residential products to three types of distributors: wholly-owned product centres, independent wholesalers and members of building supply buying groups. Dealer/installers purchase from either of the first two types of distributors. Building supply centres purchase from the buying groups to serve the do-it-yourself public. The public may also purchase from some dealer/installers.

Siding contractors are generally involved in the following residential retrofit services:

- Re-siding
- Installation of storm windows or doors
- Window replacement
- Exterior wall insulation

From the survey results (Question 1(a), Appendix C) for both Renovators and Siding/Roofing Contractors, 30% reported that they undertook cavity wall insulation; 44% undertook exterior wall insulation; 32% interior wall insulation; and, 32% undertook basement wall insulation.

3.3.2 The Roofing Industry

There are over 30 major manufacturers of roofing materials and products. The major products and materials manufactured by these companies are as follows:

- Shingles:
  - asphalt;
  - wood; and,
  - brick.
- Built-up Roofing:
  - metal;
  - plastic;
  - roof decks; and,
  - tar and gravel.
- Insulation and Fibreboard;
- Accessories:
  - base and cap sheeting;
  - membranes;
  - sealants and waterproofing; and,
  - adhesives.

The only energy conservation related product is insulated fibreboard for built-up roofs. This, and most of the other products, are oriented to the industrial and commercial marketplace. Most residential applications use asphalt shingles.

The manufacturers ship their products to independent wholesalers, building supply buying groups or directly to larger installers (particularly for commercial and industrial products). Smaller installers purchase products from the wholesalers. The do-it-yourself public purchase from building supply centres, who obtain products from the buying groups.

Roofing contractors are generally involved in the following residential retrofit services:

- Re-shingling
- Flat roof insulation
- Repair of leaks

3.3.3 The Heating Industry

The are over 50 major manufacturers of heating, ventilation and air conditioning products. The primary products manufactured by these companies are as follows:

- Furnaces (oil, electrical, gas, propane, and wood, including high-efficiency);
- Heat pumps;
- Air conditioning (central and room);
- Humidifiers/de-humidifiers;
- Air cleaners;
- Ductwork;
- Thermostats;
- Water heaters; and,
- Heat exchangers.

High-efficiency furnaces, heat pumps, variable thermostats and heat exchangers are the main products oriented to energy efficiency.

The above products are distributed by manufacturers to company-owned sales/warehousing centres. Authorized dealers/installers purchase the items from these centres. Sales centres for large equipment manufacturers also often distribute related products (eg. thermostats) from other manufacturers.

The main services provided by heating contractors to the residential retrofit marketplace are as follows:

- Heating system replacement;
- Heating system upgrade;
- Heating system conversion;
- Heating and air conditioning system service and maintenance (eg. tune-up and cleaning);
- Installation of hot water heaters;
- Installation of air conditioners;
- Installation of heat pumps;
- Installation of heat exchangers;
- Installation of wood stoves; and,
- Installation of thermostats.

3.3.4 The Insulation Industry

The are about 10 major manufacturers of insulation materials and products. The primary products manufactured by these companies are as follows:

- Blown insulation material
- Rigid exterior sheathing
- Fibreboard roofing
- Insulation batts
- Pipe insulation

All these products are oriented to energy efficiency.

The above products are distributed from the plant to regional sales offices (commercial products), wholesale distributors (commercial products), building supply centres (residential products) or contractors (commercial products). Contractors obtain supplies from the manufacturer, from the sales office or from a building supply centre, depending on the product. The public obtains products from either the sales office or a building supply centre.

The main services provided by insulation contractors to the residential retrofit market are as follows:

- Envelope air tightening
- Cavity wall insulation
- Interior wall insulation
- Basement wall insulation
- Attic insulation

3.4 APPLICATION OF ENERGY CONSERVATION TECHNOLOGY

In our interviews with manufacturers, we also asked about the level of technical and marketing support they provide to contractors, on energy conservation, and about perceived barriers to the adoption of energy conservation measures. Across all target groups there was an absence of demand from contractors or the general public for an "energy audit" approach to retrofit. Diversification of contractors to more than one target group of services does not appear to have changed their marketing approach. However, from the survey results (Question 13, Appendix C), 67% of Home Renovators, 42% of Siding/Roofing Contractors and 73% of Heating/Refrigeration Contractors strongly agreed that estimators should treat the house as a system.

3.4.1 The Siding Industry

The Siding Industry has generally discontinued the use of backerboard (beadboard) with siding, because of its poor insulating qualities, but some operators continue to install it or represent it as insulation. Only one company manufactures siding with attached urethane insulation. Because siding must be hung, with an air space behind for expansion and contraction, the opinion of manufacturers we talked to state that the insulated siding loses much of its effectiveness. The insulated siding also requires weep holes, and insulation must be cut-away in overlap areas, further reducing its insulation capabilities. The industry does not directly manufacture fibreboard insulation. In lieu, the industry

encourages the use of a full layer of other manufacturers' insulation under its siding, such as Dow's Styrofoam SM. In some cases (eg. Alcan), it is carried in those product centres where market demand justifies it.

Manufacturers of insulation provide installation instructions at the point of sale and insulation sales representatives are available to answer technical questions from installers. From the survey results (Question 2, Appendix C), some 71% of Siding/Roofing Contractors reported that they utilize manufacturing representatives to provide technical information. No training is provided by the siding manufacturers we talked to and no information is available on possible related problems.

Siding is generally sold on the basis of its weather resistance, low maintenance costs and appearance, rather than insulation opportunities. Under-insulation is sold on the basis of providing a smooth surface for the siding, especially in renovation of clapboard houses. Often, insulation is quoted as an option, due to customer price sensitivity. There is some incentive for installers to sell insulation, since it increases their profit margin on jobs.

3.4.2 The Roofing Industry

Most of the residential roofing market is covered by asphalt shingles. These have no significant insulation factor. Instead, attic insulation is used, and this is usually installed by drywall or insulation contractors. Roofing jobs are sold on the basis of weather resistance and durability rather than energy efficiency.

Built-up roofing is normally applied to commercial and industrial properties, but is also used for some multi-unit flat-roof residential housing, particularly in Quebec. These roofs may include insulated fibreboard.

The Canadian Roofing Contractors Association publishes a specifications manual for roofing installation.

3.4.3 The Heating Industry

Heating Industry manufacturers require dealers to have a licensed mechanic or to take the manufacturer's installation course for furnaces and air conditioners. Voluntary courses are offered on sales and service, and on heat pumps, but no training is provided on whole-house energy conservation.

Manufacturers have computer programs available to calculate total heat loss/gain, but contractors do not frequently request them because they are not oriented to "total comfort". Products are generally sold as single units. There are no regular contacts between heating and insulation manufacturers, although one insulation manufacturer (Dow) offered joint venture "Enerpak Services" under the R2000 program.

Energy efficient products generally sell well due to consumer interest in the specific products.

3.4.4 The Insulation Industry

The industry believes that public awareness of insulation products is high and that they are extensively used, particularly with siding installed by reputable dealers.

A substantial amount of direct advertising is done in the general media (particularly batts and blown insulation) and trade journals. Reputable contractors are sometimes listed in the general media ads. Joint advertising is undertaken with building supply centres, and some major insulation distributors/installers, but not with most contractors, because of their large number. Sales representatives keep contact with insulation and siding installers, but not roofing or heating contractors. They participate in trade shows, presenting seminars on the benefits of insulation with siding.

The industry believes that the major siding and insulation contractors are experienced in installing insulation, and that there are few resulting technical problems. There are no licensing requirements nor legislated standards for insulation installation. For new contractors, or those installing the products for the first time, the sales office staff are available to provide on-site direction or to answer any questions. Advisory services are also available to the public. Installation procedures for exterior sheathing are available at the point of purchase. However, concerns were expressed over a few "bad actor" siding installers who sell non-insulating backerboard, or install insulation improperly creating cavity moisture problems or reducing the insulation factor.

The industry has computer progams available for heat loss calculations on behalf of contractors or the public.

4.0 MAJOR SURVEY FINDINGS

4.1 INTRODUCTION

This section of the report presents the major findings from the survey. As well, and where appropriate, contextual information will be used from Section 3.0 - Industry Profile. The main issues addressed in this sub-section are concerned with the identification of respondents to the survey with a view to determining any implications that impact on the demand for training and, assessing the demand for training.

4.2 PROFILE OF RESPONDENTS

Table 4.1 presents a profile of survey respondents by size of business (number of employees).

TABLE 4.1: SURVEY RESPONDENTS BY NUMBER OF EMPLOYEES - 1986

NUMBER OF EMPLOYEES	Contractor Type						TOTAL	
	Home Renovators		Siding/Roofing		Heating/Refrig.		Count	Pct
	Count	Pct	Count	Pct	Count	Pct		
No. of Employees								
1-5 Employees	66	67%	43	45%	55	56%	164	56%
6-10	13	13%	18	19%	19	19%	50	17%
11-20	7	7%	19	20%	15	15%	41	14%
21-50	10	10%	12	13%	8	8%	30	10%
51-100	2	2%	2	2%	2	2%	6	2%
101 +	1	1%	2	2%	0	0%	3	1%
TOTAL	99	100%	96	100%	99	100%	294	100%

Source: Goss, Gilroy & Associates Ltd.

As may be observed, each of the groups surveyed contain a majority of firms having a relatively small number of employees. In fact on average 56% of the total number of firms have fewer than 5 employees, while an additional 31% of the firms have between 6 and 20 employees. Home Renovating Contractors are generally smaller in size (based upon the number of full-time employees) than firms in the other two sectors. However, Home Renovators subcontract a larger proportion of their labour intensive work (installation) than the other two sectors. Specifically, 83% of Home Renovators subcontract installation work versus 55% and 59% for Siding/Roofing and Heating/Refrigeration Contractors, respectively (refer to Question 27, Appendix A).

Table 4.2 identifies for each of th survey respondents, the province(s) in which they conduct business. Provision was made for up to four responses and as may be observed, a total of 3 respondents operate in 4 or more provinces.

TABLE 4.2: SURVEY RESPONDENTS BY PROVINCE OF BUSINESS ACTIVITY

PROVINCES	Contractor Type						TOTAL	
	Home Renovators		Siding/Roofing		Heating/Refrig.		Count	Pct
	Count	Pct	Count	Pct	Count	Pct		
Province								
Yuk. & NWt.	0	0%	0	0%	2	2%	2	1%
B.C.	1	1%	6	6%	8	8%	15	5%
Alt.	7	7%	4	4%	7	7%	18	6%
Sask.	0	0%	6	6%	2	2%	8	3%
Ont.	57	58%	58	58%	47	47%	162	54%
P.Q.	22	22%	21	21%	30	30%	73	24%
N.B.	7	7%	1	1%	2	2%	10	3%
N.S.	3	3%	4	4%	2	2%	9	3%
P.E.I.	2	2%	0	0%	0	0%	2	1%
TOTAL	99	100%	100	100%	100	100%	299	100%
Province								
B.C.	1	11%	1	25%	0	0%	2	12%
Alt.	1	11%	1	25%	3	75%	5	29%
Sask.	0	0%	0	0%	1	25%	1	6%
Ont.	0	0%	1	25%	0	0%	1	6%
P.Q.	4	44%	1	25%	0	0%	5	29%
N.B.	1	11%	0	0%	0	0%	1	6%
N.S.	2	22%	0	0%	0	0%	2	12%
TOTAL	9	100%	4	100%	4	100%	17	100%
Province								
Yuk. & NWt.	0	0%	1	33%	0	0%	1	14%
B.C.	0	0%	0	0%	1	100%	1	14%
Alt.	0	0%	1	33%	0	0%	1	14%
Sask.	2	67%	1	33%	0	0%	3	43%
N.B.	1	33%	0	0%	0	0%	1	14%
TOTAL	3	100%	3	100%	1	100%	7	100%
Province								
Man.	0	0%	1	100%	0	0%	1	33%
Ont.	1	50%	0	0%	0	0%	1	33%
N.S.	1	50%	0	0%	0	0%	1	33%
TOTAL	2	100%	1	100%	0	0%	3	100%

Source: Goss, Gilroy & Associates Ltd.

As previously stated in Section 2.0, firms were sampled on a national basis. As such, it is reasonable to expect that the percentages reported in Table 4.2 reflect the population. The sample was not selected such that it is biased towards selecting a disproportionate number of firms from Ontario and Quebec. This fact has obvious implications for any assessment of market demand for technical training.

Table 4.3 examines service offerings undertaken by contractors in each of the three sectors. It is interesting to note that Home Renovators and Siding/Roofing contractors offer essentially the same services with the possible exception of work involving heating systems and related items. Home Renovators are more diversified than Heating/Roofing contractors and undertake work in this area. However, it may be that subcontracting plays a large role in jobs of this nature. As well, it should be noted that although these two types of contractors undertake similar work, the emphasis or focus of each group is different. In sharp contrast, Heating/Refrigeration contractors do not seem to undertake work that is not directly related to heating systems. From the perspective of advertising for technical information and training, it would appear that Home Renovating and Siding/Roofing contractors could initially be treated as one market.

TABLE 4.3: SURVEY RESPONDENTS BY SERVICE OFFERINGS - 1986

HOME IMPROVEMENT COMPONENTS	Contractor Type						TOTAL	
	Home Renovators		Siding/Roofing		Heating/Refrig.		Count	Pct
	Count	Pct	Count	Pct	Count	Pct		
Energy Conservation Improvement Components								
Window Replacement	87	90%	54	73%	0	0%	141	52%
Install Storm Windows	79	81%	18	24%	0	0%	97	36%
Storm-Doors	82	85%	53	72%	0	0%	135	50%
Envelope Air Tightening	80	82%	42	57%	0	0%	122	45%
Attic Insulation	72	74%	15	20%	0	0%	87	32%
Flat Roof Insulation	59	61%	26	35%	0	0%	85	31%
Cavity Wall Insulation	68	70%	13	18%	0	0%	81	30%
Exterior Wall Insulation	72	74%	48	65%	0	0%	120	44%
Interior Wall Insulation	77	79%	9	12%	0	0%	86	32%
Basement Wall Insulation	74	76%	14	19%	0	0%	88	32%
Heating Sys. Maintenance & Retrofit	26	27%	1	1%	93	93%	120	44%
Heating Sys. Conversion	24	25%	2	3%	86	86%	112	41%
Thermostats	23	24%	1	1%	94	94%	118	44%
Install Wood Stoves	15	15%	4	5%	18	18%	37	14%
Super Insulated Retrofit	33	34%	2	3%	0	0%	35	13%
TOTAL	97	100%	74	100%	100	100%	271	100%

Source: Goss, Gilroy & Associates Ltd.

Table 4.4 profiles the number of years of experience brought to the job by various types of employees for the three sectors. The first point to be made, relative to this table, is that for categories other than "Installers" and "Owners/Managers", the response rate is very low. In all likelihood, this fact is a reflection of the large proportion of small firms which comprise our sample. For purposes of assessing the market for technical training, the majority of persons in all employment categories for each sector, have more than three years of job related experience. Of course, we don't know the experience profile of subcontractors but this group represents a very different segment of the market for training.

TABLE 4.4: SURVEY RESPONDENTS BY NUMBER OF YEARS OF JOB RELATED EXPERIENCE - 1986

PERSONNEL TYPE	Contractor Type						TOTAL	
	Home Renovators		Siding/Roofing		Heating/Refrig.		Count	Pct
	Count	Pct	Count	Pct	Count	Pct		
Sales Staff								
< 1 Yr. of Exp.	0	0%	0	0%	1	4%	1	2%
1 - 3 Yrs. of Exp.	5	22%	1	8%	3	12%	9	15%
3 + Yrs. of Exp.	18	78%	12	92%	21	84%	51	84%
TOTAL	23	100%	13	100%	25	100%	61	100%
Estimators								
< 1 Yr. of Exp.	1	4%	0	0%	1	4%	2	3%
1 - 3 Yrs. of Exp.	4	14%	0	0%	2	7%	6	9%
3 + Yrs. of Exp.	23	82%	12	100%	24	89%	59	88%
TOTAL	28	100%	12	100%	27	100%	67	100%
Installers								
< 1 Yr. of Exp.	10	12%	26	29%	15	16%	51	19%
1 - 3 Yrs. of Exp.	15	17%	22	25%	18	20%	55	21%
3 + Yrs. of Exp.	61	71%	41	46%	58	64%	160	60%
TOTAL	86	100%	89	100%	91	100%	266	100%
Inspectors								
1 - 3 Yrs. of Exp.	2	18%	0	0%	0	0%	2	8%
3 + Yrs. of Exp.	9	82%	2	100%	11	100%	22	92%
TOTAL	11	100%	2	100%	11	100%	24	100%
Owners/Mgr.								
< 1 Yr. of Exp.	1	1%	12	13%	0	0%	13	5%
1 - 3 Yrs. of Exp.	3	3%	3	3%	0	0%	6	2%
3 + Yrs. of Exp.	91	96%	78	84%	97	100%	266	93%
TOTAL	95	100%	93	100%	97	100%	285	100%
Other								
< 1 Yr. of Exp.	1	13%	3	17%	0	0%	4	11%
1 - 3 Yrs. of Exp.	0	0%	1	6%	1	11%	2	6%
3 + Yrs. of Exp.	7	88%	14	78%	8	89%	29	83%
TOTAL	8	100%	18	100%	9	100%	35	100%

Source: Goss, Gilroy & Associates Ltd.

Table 4.5 profiles the level of formal education **typically** attained by employees and owners/managers within the responding firms. The majority (roughly 47%) of employees have **some** high school or trade school education, while about 27% have graduated from high school. For owners/managers, an average of 76% have graduated from high school and/or received some post secondary education. From a market viewpoint, the safest assumption is to go with the lowest common trait which would ensure that respondents have either some high school or trade school experience.

TABLE 4.5: SURVEY RESPONDENTS BY ATTAINED LEVEL OF EDUCATION - 1986

PERSONNEL TYPE	Contractor Type						TOTAL	
	Home Renovators		Siding/Roofing		Heating/Refrig.		Count	Pct
	Count	Pct	Count	Pct	Count	Pct		
Employees								
Some High School	28	30%	36	50%	22	24%	86	33%
High School Grad.	20	22%	20	28%	29	31%	69	27%
Some Trade School	20	22%	3	4%	13	14%	36	14%
Trade Grad.	6	7%	2	3%	26	28%	34	13%
Some University	1	1%	1	1%	0	0%	2	1%
University Grad.	2	2%	1	1%	0	0%	3	1%
Other	15	16%	9	13%	3	3%	27	11%
TOTAL	92	100%	72	100%	93	100%	257	100%
Owners/Mgr.								
Some High School	15	15%	23	24%	13	13%	51	17%
High School Grad.	19	19%	21	22%	20	20%	60	20%
Some Trade School	5	5%	10	11%	12	12%	27	9%
Trade Grad.	15	15%	4	4%	37	37%	56	19%
Some University	8	8%	7	7%	5	5%	20	7%
University Grad.	11	11%	11	12%	10	10%	32	11%
Other	26	26%	19	20%	3	3%	48	16%
TOTAL	99	100%	95	100%	100	100%	294	100%

Source: Goss, Gilroy & Associates Ltd.

4.3 DEMAND FOR TECHNICAL TRAINING

This sub-section of the report addresses the central issue and rationale for the contractor survey namely, what is the demand for technical training. The assessment of demand will be made from several points of view. In the first instance, respondents were asked whether or not they were in favour of technical training. As well, there were several additional questions posed which serve to confirm or refute the perceived demand for training.

Table 4.6 addresses the issue of whether or not survey respondents are in favour of technical training for themselves and/or their employees.

TABLE 4.6: SURVEY RESPONDENTS BY ATTITUDE TO THE NEED FOR TECHNICAL TRAINING - 1986

	Contractor Type						TOTAL	
	Home Renovators		Siding/Roofing		Heating/Refrig.		Count	Pct
	Count	Pct	Count	Pct	Count	Pct		
Favour Training								
Yes	55	56%	54	55%	83	83%	192	64%
Possibly	10	10%	10	10%	2	2%	22	7%
No	34	34%	35	35%	15	15%	84	28%
TOTAL	99	100%	99	100%	100	100%	298	100%

Source: Goss, Gilroy & Associates Ltd.

On average 64% of respondents were in favour of technical training with an additional 7% of respondents "possibly" being in favour of technical training. There is, however, a wide variance in responses amongst the various types of contractors. Home Renovation and Siding/Roofing contractors replied that 56% and 55% respectively, were in favour of technical training with an additional 10% in each group being possibly interested. In contrast, 83% of Heating/Refrigeration contractors were in favour of technical training with only an additional 2% being uncommitted.

The percentages expressed above can also be extended to determine the actual number of firms in favour of training. At this point the reader should recall that the results of this survey are valid for all Canadian cities having more than 20,000 people. Because the percentages being quoted are derived from a sample of firms, the estimate for the number of firms in favour of training will be presented in a range of values or in terms of a confidence interval. The estimates for the total number of firms were derived from the total number of firms present in each sample frame (see Section 2.0 - Survey Methodology) for details. Table 4.7 presents GGA's estimate (at a 95% level of confidence) of the number of firms in favour of technical training.

TABLE 4.7: NUMBER OF FIRMS IN FAVOUR OF TECHNICAL TRAINING

RESPONSE VARIABLE	CONTRACTOR TYPE						TOTAL	
	Home Renovators		Siding/Roofing		Heating/Refrig.			
	Lower Bound	Upper Bound	Lower Bound	Upper Bound	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Yes Response Only	2,535	3,637	2,041	2,948	2,648	3,374	7,383	10,118
Yes and Possible Responses	3,086	4,188	2,494	3,401	2,721	3,447	8,341	11,075

Source: Goss, Gilroy & Associates Ltd.

In examining the "Total" estimates summed across all three contracting groups, we can conservatively state that we are 95% confident that between 7,383 and 10,118 firms are in favour of technical training, for an aggregate of the three sectors surveyed. Further, from information presented in the prior sub-sector, we estimate that approximately 56% of these firms have fewer than 5 employees and approximately 78% of these firms operate in the provinces of Ontario or Quebec.

The next set of tables provide confirmatory evidence related to the estimate of demand for technical training. As such, only those firms who responded "yes" to the question (Question 7) of whether or not they were in favour of technical training are included as respondents. Specifically, those responding "no" or "possibly" to Question 7 are excluded from these next confirmatory type tables.

Table 4.8 examines the issue of whether those in favour of technical training thought that such training would expand their business. As may be observed, on average some 80% of all respondents favourable to training thought training would help to expand their business. Implicitly they were agreeing that some positive economic impact would result from undertaking technical training.

TABLE 4.8: SURVEY RESPONDENTS IN FAVOUR OF TECHNICAL TRAINING BY EXPECTATION OF EXPANDED BUSINESS FROM SUCH TRAINING

	Contractor Type						TOTAL	
	Home Renovators		Siding/Roofing		Heating/Refrig.		Count	Pct
	Count	Pct	Count	Pct	Count	Pct		
expand business								
Yes	49	89%	34	67%	67	82%	150	80%
No	6	11%	17	33%	15	18%	38	20%
TOTAL	55	100%	51	100%	82	100%	188	100%

Source: Goss, Gilroy & Associates Ltd.

Table 4.9 examines for those in favour of technical training, the issue of who should pay for such training. On average, 56% of all respondents thought that an entity other than the employer or employee should pay for training. Typically, this "other" category comprised several combinations of employers, employees, governments and unions who should **share** the costs associated with training. An additional 23% thought that training costs should be shared by the employer/employee while only 12% of employers thought they should pay for training. The message very clearly is that training is good as long as someone else provides assistance in paying for it.

TABLE 4.9: SURVEY RESPONDENTS IN FAVOUR OF TECHNICAL TRAINING BY WHO SHOULD PAY FOR SUCH TRAINING

	Contractor Type						TOTAL	
	Home Renovators		Siding/Roofing		Heating/Refrig.		Count	Pct
	Count	Pct	Count	Pct	Count	Pct		
Who Pays								
Employees	3	6%	6	11%	9	11%	18	10%
Employer	3	6%	7	13%	12	15%	22	12%
Shared	18	33%	4	7%	21	26%	43	23%
Other	30	56%	37	69%	38	48%	105	56%
TOTAL	54	100%	54	100%	80	100%	188	100%

Source: Goss, Gilroy & Associates Ltd.

Table 4.10 examines for survey respondents in favour of technical training, the amount respondents paid **last year** to purchase **technical information**. Some 48% of all respondents did not pay anything to purchase technical information while an additional 38% spent less than $500. Respondents also replied that expenditures to purchase technical information **next** year were virtually identical to those displayed in Table 4.10.

TABLE 4.10: SURVEY RESPONDENTS IN FAVOUR OF TECHNICAL TRAINING BY PAST EXPENDITURE FOR TECHNICAL INFORMATION

	Contractor Type						TOTAL	
	Home Renovators		Siding/Roofing		Heating/Refrig.		Count	Pct
	Count	Pct	Count	Pct	Count	Pct		
Last Year								
not willing to pay	22	40%	33	62%	37	45%	92	48%
$1 - $50	11	20%	12	23%	6	7%	29	15%
$51 - $500	14	25%	3	6%	27	33%	44	23%
$501 - $1000	3	5%	3	6%	4	5%	10	5%
$1001 - $1500	1	2%	1	2%	0	0%	2	1%
$1500+	4	7%	1	2%	9	11%	14	7%
TOTAL	55	100%	53	100%	83	100%	191	100%

Source: Goss, Gilroy & Associates Ltd.

Table 4.11 is very similar to Table 4.10 except that it examines last year's expenditures for technical training.

TABLE 4.11: SURVEY RESPONDENTS IN FAVOUR OF TECHNICAL TRAINING BY PAST EXPENDITURES FOR TECHNICAL TRAINING

	Contractor Type						TOTAL	
	Home Renovators		Siding/Roofing		Heating/Refrig.		Count	Pct
	Count	Pct	Count	Pct	Count	Pct		
Last Year								
not willing to pay	28	70%	43	81%	35	43%	106	61%
$1 - $50	0	0%	1	2%	5	6%	6	3%
$51 - $500	6	15%	3	6%	22	27%	31	18%
$501 - $1000	4	10%	2	4%	6	7%	12	7%
$1001 - $1500	1	3%	1	2%	2	2%	4	2%
$1500+	1	3%	3	6%	11	14%	15	9%
TOTAL	40	100%	53	100%	81	100%	174	100%

Source: Goss, Gilroy & Associates Ltd.

As was the case in Table 4.10, a substantial proportion (61%) of respondents, who favoured technical training, paid nothing for technical training last year. However, 18% of these respondents or about 12% of all survey respondents (total of 300 respondents) stated that they spent more than $500 last year to purchase technical training.

5.0 CONCLUSIONS AND RECOMMENDATIONS

This final section of the report presents conclusions arrived at and supported by the results of the survey of Home Renovators, Siding/Roofing and Heating/Refrigeration Contractors. The section concludes with a recommendation as to how proceed with training vis à vis the contracting industry addressed by this survey.

Conclusions

1. Overall there appears to be a substantial requirement for technical training. Some 64% of all three types of contractors stated that they were in favour of training. This translates to between 7,383 to 10,118 firms. However, this optimism should be tempered by the fact that most respondents wanted assistance to help pay for training.

2. The majority of Contracting firms (includes all three types) are very small with 73% having fewer than 10 employees. Nominally, the market for technical training would appear to be quite dispersed. However, some 78% of these firms are located in Ontario and Quebec. As well, some 66% of all firms subcontract installation work. These installers who work on a subcontract basis should be viewed as an additional market for technical training.

3. The service offerings of Home Renovators and Siding/Roofing contractors are sufficiently similar to be treated as one, unified market for purposes of advertising technical training. However, because of the degree of subcontracting, care should be taken to tailor course content to the specific needs of each audience.

Recommendation

Because the market for technical training (with respect to contractors included in this survey) is comprised of many small firms and given the fact that much subcontracting exists, we recommend that:

- the technical training strategy take into account all levels in the distribution chain above the contracting firms. The appropriate level may well be the manufacturing firms whose energy conservation products are ultimately provided to the contractors.